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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/550,846

04/17/2007

Stephane Luc Calvez

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6032

33197

7590

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EXAMINER

FORDE, DELMA ROSA

ART UNIT

PAPER NUMBER

2828

MAIL DATE

DELIVERY MODE

06/18/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/550,846	<b>Applicant(s)</b> CALVEZ ET AL.	
	<b>Examiner</b> DELMA R. FORDE	<b>Art Unit</b> 2828	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 March 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 – 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 1, 2, 6, 10, 25, and 32 the phrase “selected ***optical*** effect” is not disclosed on the specification. Applicant discloses a selected optical function, but doesn’t mention in the specification a selected optical effect. Selected optical function is not the same as selected optical effect. Correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 – 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 1, 2, 6, 10, 25, and 32 the phrase “selected

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**optical** effect” is not disclosed on the specification. Applicant discloses a selected optical function, but doesn't mention in the specification a selected optical effect. Selected optical function is not the same as selected optical effect. Correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

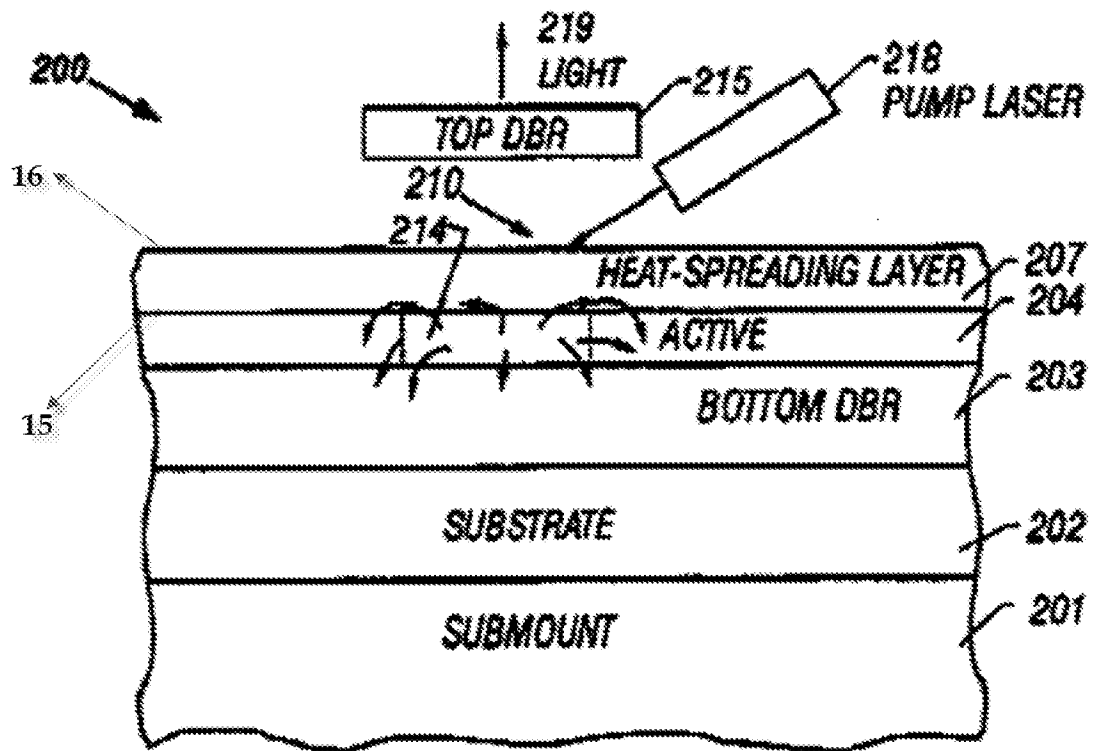
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 10-11, 20 - 22, 25, 29 – 30 and 32 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Zheng (2003/0039284).

***Regarding claims 1, 6, and 10 – 11*** Zheng discloses a vertical-cavity device comprising: (a) a chip (see Figure 2, Character 200) comprising an active semiconductor layer (see Figure 2, Character 204) configured to provide optical gain; (b) a first mirror (see Figure 2, Character 203) arranged on a first side of the active layer (see Figure 2, Character 204); (c) a second mirror (see Figure 2, Character 215) arranged on a second side of the active layer (see Figure 2, Character 204), opposite to the first mirror (see Figure 2, Character 203), and forming with at least the first mirror (see Figure 2, Character 203) an optically resonant cavity that passes through the active layer in a direction out of the plane of the active layer (see Figure 2, Character

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204, Paragraphs [0002, 0009]); and(d) a heat spreader (see Figure 2, Character 207) for removing heat from the active layer (see Figure 2, Character 204 and Paragraphs [0029, 0037- 0038]), the heat spreader (see Figure 2, Character 207) being arranged inside the cavity and having a first surface (see Figure 2, Character 15) adjacent to the chip and a second surface (see Figure 2, Character 16) opposite to the first surface, the heat spreader being transparent to light of wavelengths in an operating bandwidth of the device (Paragraph [0037]); and having at least one selected property that has a selected optical effect on light output from the device (Paragraph [0039]) in addition to the effect of removing heat from the active layer (see Paragraphs [0026, 0032, 0037 – 0041, 0059 and 0063 – 0065]).



The examiner modified the drawing to be clearer in the rejection.

**Regarding claims 20, 21 and 22**, Zheng discloses a second surface of the heat spreader has a dielectric coating, the dielectric coating is an anti-reflection coating and the dielectric coating is a mirror coating and forms the second mirror (Paragraph [0061], the reference discloses a heat-spreading could be made of different materials e.g. diamond and diamond is a dielectric material, the examiner believe that include a dielectric coating, anti-reflection coating, etc.).

**Regarding claims 25 and 29**, Zheng discloses a method of manufacturing a vertical-cavity device comprising: (a) fabricating a chip (see Figure 2, Character 200) comprising an active semiconductor layer (see Figure 2, Character 204) for providing configured to provide optical gain; (b) providing a first mirror (see Figure 2, Character 203) arranged on a first side of the active layer (see Figure 2, Character 204); (c) providing a second mirror (see Figure 2, Character 215) arranged on a second side of the active layer (see Figure 2, Character 204), opposite to the first mirror (see Figure 2, Character 203), and forming with at least the first mirror (see Figure 2, Character 203) an optically resonant cavity that passes through the active layer in a direction out of the plane of the active layer (see Figure 2, Character 204, Paragraphs [0002, 0009]); and (d) providing in the cavity a heat spreader (see Figure 2, Character 207) for removing heat from the active layer (see Figure 2, Character 204 and Paragraphs [0029, 0037- 0038]), the heat spreader (see Figure 2, Character 207) being arranged inside the cavity and having a first surface (see Figure 2, Character 15) adjacent to the chip

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and a second surface (see Figure 2, Character 16) opposite to the first surface, the heat spreader being transparent to light of wavelengths in an operating bandwidth of the device (Paragraph [0037]); (e) selecting at least one property of the heat spreader to have a selected optical effect on the output light (see Paragraph [0039]), in addition to the effect of removing heat from the active region (see Paragraphs [0026, 0032, 0037 – 0041, 0059 and 0063 – 0065]).

**Regarding claim 30,** Zheng discloses a source of pump light (see Figure 2, Character 218, the reference call “pump laser”).

**Regarding claim 32,** Zheng discloses a vertical cavity device comprising: (a) a chip (see Figure 2, Character 200) comprising an active semiconductor layer (see Figure 2, Character 204) for providing optical gain; (b) a first mirror (see Figure 2, Character 203) arranged on a first side of the active layer (see Figure 2, Character 204) suitable for forming with at least a second mirror arranged (see Figure , Character ) on a second side of the active layer (see Figure 2, Character 204), opposite to the first mirror (see Figure 2, Character 203), an optically resonant cavity that passes through the active layer in a direction out of the plane of the active layer (see Figure 2, Character 204, Paragraphs [0002, 0009]; and (c) a heat spreader (see Figure 2, Character 207) for removing heat from the active layer (see Figure 2, Character 204 and Paragraphs [ 0029, 0037- 0038]), having a first surface (see Figure 2, Character 15) adjacent to the active layer (see Figure 2, Character 204) and a second surface (see Figure 2,

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Character 16) opposite to the first surface (see Figure 2, Character 15), the heat spreader (see Figure 2, Character 207) being transparent to light of wavelengths in an operating bandwidth of the device (Paragraph [0037]) and, in addition to removing heat from the active layer, at least one further selected property that has a selected optical effect on light output from the device (see Paragraph [0039]).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284) in view of Chang et al (6,711,310).

***Regarding claims 2 and 4***, Zheng discloses the claimed invention except for the heat spreader is birefringent and the further selected effect is on the polarization. Chang teaches the heat spreader is birefringent and the further selected effect is on the polarization. However, it is well known in the art to apply the heat spreader is birefringent and the further selected effect is on the polarization as disclosed by Chang in Column 6, Lines 43 – 48. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply the well known the heat spreader is birefringent and the further selected effect is on the polarization as suggested by Chang

to the VCSEL of Zheng, because could be to remove or directed away the light and could be used to transmit only rays of predetermined wavelength and control the polarization direction of the transmitted ray, see Chang in Column 6, Lines 43 – 48.

**Regarding claim 3**, Zheng discloses the claimed invention except for the difference in between the refractive indices of the heat spreader's slow and fast polarization axes is greater than 0.01. It would have been obvious to one having ordinary skill in the art at the time the invention was made to could be greater or less than 0.01 the difference in between the refractive indices of the heat spreader's slow and fast polarization axes, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In addition, the selection of the difference in between the refractive indices of the heat spreader's slow and fast polarization axes, it's obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA)

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(discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and *In re Aller*, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed [difference in between the refractive indices of the heat spreader's slow and fast polarization axes is greater than 0.01] or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen [difference in between the refractive indices of the heat spreader's slow and fast polarization axes is greater than 0.01] or upon another variable recited in a claim, the Applicant must show that the chosen [difference in between the refractive indices of the heat spreader's slow and fast polarization axes is greater than 0.01] are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284).

**Regarding claim 5**, Zheng discloses the claimed invention except for heat spreader has a nonlinear optical response. It would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known heat spreader has a nonlinear optical response as suggested by Zheng to the VCSEL because, that can happened, when the nonlinear and heat spreader has made with

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similar material, therefore generally be a property of the material of which is made, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Claims 7, 9, 16, 18 – 19 and 26 – 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284).

***Regarding claims 7, 9, 16 and 26 – 28,*** Zheng discloses the claimed invention except for second surface of the heat spreader is curved or includes a curves structure and the heat spreader has a shape selected to provide control of a spatial mode of the output light. Notwithstanding, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); Gardner v. TEC

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Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

**Regarding claim 18**, Zheng discloses the second mirror is flat (see Figure 2, Character 215).

**Regarding claim 19**, Zheng discloses a second mirror is a MEMS mirror (Paragraph [0039], applicant don't explicitly said MEMS, but the applicant definition on PGPub 2008/0043798) said MEMS is a mirror could be used for fine tuning application and the reference use a mirror for reduce tuning).

Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284) in view of Raymond et al. (6,393,038)

**Regarding claims 8 and 17**, Zheng discloses the claimed invention except for heat spreader focuses or defocuses intracavity light. Raymond teaches heat spreader focuses or defocuses intracavity light. However, it is well know in the art to apply the heat spreader focuses or defocuses intracavity light as discloses by Raymond in (Column 5, Lines 49 – 53). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known heat spreader focuses or defocuses intracavity light as suggested by Raymond to the laser

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of Zheng, because could be used a lens to produce the focuses or defocuses intracavity light in the heat spreader see (Column 5, Lines 49 – 53) of Raymond.

Claims 12 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284).

**Regarding claim 12 and 14**, Zheng discloses the claimed invention except for the heat spreader has a refractive index that has been selected to provide substantially no refractive index step at the first surface and to provide a refractive index step at the first surface. It would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known heat spreader has a refractive index that has been selected to provide substantially no refractive index step at the first surface and to provide a refractive index step at the first surface as suggested by Zheng to the VCSEL, because two common properties of glass and other transparent materials are directly related to their refractive index. First, light rays change direction when they cross the interface from air to the material, an effect that is used in lenses or glass or other transparent materials. Second, light reflects partially from surfaces that have a refractive index different from that of their surroundings and to vary as the light passes through it.

**Regarding claim 13**, Zheng discloses the claimed invention except for

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reflectance at the first surface of the heat spreader is less than 5%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to reflectance more than 5% at the surface of the heat spreader, since it has been held that where the general conditions of a claim is disclosed in the prior art, discovering the optimum or workable ranges involve only routine skill in the art. *In re Aller*, 105 USPQ 233.

In addition, the selection of reflectance at the first surface of the heat spreader, it's obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and *In re Aller*, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed [reflectance at the first surface of the heat spreader is less than 5%] or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen [reflectance at the first surface of the heat spreader is less than 5%] or

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upon another variable recited in a claim, the Applicant must show that the chosen [reflectance at the first surface of the heat spreader is less than 5%] are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284).

**Regarding claim 15**, Zheng discloses the claimed invention except for second surface of the heat spreader is at an angle to the layers of the chip. It would have been obvious to one having ordinary skill in the art at the time the invention was made to second surface of the heat spreader can has any type of angle (e.g. 90<sup>0</sup> degrees or 147<sup>0</sup> degrees), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In addition, the selection of second surface of the heat spreader it's obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges or a result effective variable, which do not overlap the prior art ranges,

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are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and *In re Aller*, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed [second surface of the heat spreader is at an angle to the layers of the chip] or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen [second surface of the heat spreader is at an angle to the layers of the chip] or upon another variable recited in a claim, the Applicant must show that the chosen [second surface of the heat spreader is at an angle to the layers of the chip] are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 23, is rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284).

**Regarding claim 23**, Zheng discloses the claimed invention except for heat spreader has a thickness of less than 1.5mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to the heat spreader can be more than 1.5, also thick enough to remove a not-insubstantial amount of heat from active region, since it has been held that where the general conditions of a claim

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are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In addition, the selection of thickness of heat spreader, it's obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and *In re Aller*, 105 USPQ 233 (CCPA 1995) (selection of optimum a range within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed [heat spreader has a thickness of less than 1.5mm] or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen [heat spreader has a thickness of less than 1.5mm] or upon another variable recited in a claim, the Applicant must show that the chosen [heat spreader has a thickness of less than 1.5mm] are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284) in view of Yoshida et al (2002/0136254).

**Regarding claim 31**, Zheng discloses the claimed invention except for amplifier or laser is a Raman amplifier. Yoshida teaches amplifier or laser is a Raman amplifier. However, it is well known in the art to apply the amplifier or laser is a Raman amplifier as disclosed by Yoshida in Paragraphs [0005, 0010]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known amplifier or laser is a Raman amplifier as suggested by Yoshida to the laser of Zheng, because could be used to construct to amplify any desired wavelength so long as pumping light source can be prepared. Raman gain produced by the pumping light to be stable, thereby preventing associated noise from being modulated onto the input signal see Paragraphs [0005 and 0010] of Yoshida.

### ***Response to Arguments***

Applicant's arguments filed 03/02/2009 have been fully considered but they are not persuasive. Examiner rejected claims 1 - 32 by Claim Rejections - 35 USC § 112, first and second, because in claims 1, 2, 6, 10, 25, and 32 the phrase "selected **optical** effect" is not disclosed on the specification. Applicant discloses a selected optical function, but doesn't mention in the specification a selected optical effect. Selected optical function is not the same of selected optical effect.

Applicant argues the prior art lack on pages 8 – 20, said:

"Zheng therefore does not disclose the present invention, namely, a heatspreader having a selected optical effect or function, in addition to the heat-spreading function of a heatspreader, as recited in the present claims".

The examiner disagrees with the applicant's argument, since the prior art does teach or suggest claim 1, 25 and 32. The reference discloses at least one selected property that has a selected optical effect on light output from the device (Paragraph [0039]) in addition to the effect of removing heat from the active layer (see Paragraphs [0026, 0032, 0037 – 0041, 0059 and 0063 – 0065]). The reference doesn't explicitly said selected optical effect, but explain how the heat-spreader layer affect the (e.g. on Paragraph [0039], said: a thicker heat-spreading layer will tend to conduct more heat away from active region 214. However, a thicker heat-spreading layer will also absorb more light, thus increasing loss and reducing laser efficiency, and will also have higher resistance, causing more heat to be generated (for an EP VCSEL). Additionally, the thicker the heat-spreading layer is, the more it will interfere with (e.g., narrow) the reflectivity profile of the DBRs, thus reducing the tuning and/or lasing range of the VCSEL. Thus, heat-spreading layer 207 is preferably thick enough to remove a not-insubstantial amount of heat from active region 214, and in an embodiment is substantially thicker (e.g., orders of magnitude) than the individual layers of active region 214 and a DBR).

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically

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pointing out how the language of the claims patentably distinguishes them from the references.

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DELMA R. FORDE whose telephone number is (571)272-1940. The examiner can normally be reached on M-T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun O. Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DELMA R. FORDE/  
Examiner, Art Unit 2828

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